Ben Franklin Bridge West-side Roadways Congestion Mitigation Project

SCOPE OF SERVICES

This scope of services in prepared in response to a DRPA request to complement the Delaware River Port Authority (DRPA) request for proposals for the Ben Franklin Bridge West-side Roadways Congestion Mitigation Study, dated August 9, 2005. This work plan identifies the DVRPC support required for the Needs Study portion of congestion mitigation project. This scope of services includes the work needed to assemble a database of relevant DVRPC data for use by the consultants and to prepare 2030 projections of traffic volumes on the Ben Franklin Bridge and a limited number of roadways in the Vine Street Corridor and other impacted areas. Specifically projections will be prepared for selected ramps and roadways feeding traffic to the Bridge in the I-676 Interchange complex, and for a limited number of major streets in the west side congestion mitigation study area. This initial phase includes only the portions of the overall traffic study that are needed to prepare the projections needed to evaluate the alternatives of the congestion mitigation needs study. DVRPC will provide forecasted 2030 growth factors for existing roadways in the corridor as well as projections for proposed new facility enhancements. Year 2030 forecasts will be prepared for alternatives four through seven of the initial DRPA alternatives:

(4) Widening of Vine Street between the Ben Franklin Bridge and 9th Street

(5) Flyover Ramp from the Ben Franklin Bridge to I-676 WB

(6) Addition of a 2nd Lane to the Broad Street Off-Ramp from I-676 WB

(7) Walt Whitman Bridge Slip Ramp

A travel simulation model will be prepared for the Ben Franklin Bridge West-side Roadways Congestion Mitigation Study and detailed 2030 projections, including peak hour link and intersection volumes, prepared for the No-build and up to two promising build alternatives.

DVRPC proposes the following seven tasks to compete the study:

Task 1 - Define Study Area Boundaries and Zonal System

In cooperation with DRPA and the consultant group, identify the boundary of the study area that includes the Ben Franklin Bridge West-side Roadways Congestion Mitigation Project, adjacent traffic impact areas, and the proposed highway improvements to be considered in the study. Identify the highway facilities requiring forecasts including bridges and ramps, arterial roadways, and street intersections. Review the simulation model highway network and traffic zone system -- identify split traffic zones and local streets to be added to the network within the Congestion Mitigation Study Area.

Task 2 - Provide Census, GIS Mapping, and Traffic Count Data

2000 Census data including demographic, employment, and journey to work data will be provided for the Ben Franklin Bridge West-side Roadways Congestion Mitigation Study Area. Available GIS maps and related data bases in DVRPC's files will be provided including existing traffic counts, land use inventories, etc. Additional highway link ATR tube and vehicle type truck classification counts required for the model calibration will be collected by the consultant group and provided for use in the study.

Task 3 - Prepare 2000 and 2030 Demographic and Employment Data

Review the 2000 and 2030 demographic and employment data inputs to DVRPC's model and develop updated 2000 and 2030 socioeconomic data for the DVRPC region and related variables such as area type. This includes demographic and employment data required by the trip generation models, including population, households, employed residents, auto ownership, and employment by Standard Industrial Code (SIC) group by Transportation Analysis Zone (TAZ). DVRPC will prepare zonal estimates of households by vehicle availability, employed residents, and employment by SIC group for input to trip generation model.

Task 4 - Prepare Base Highway Network

The 2000 and 2030 highway and transit networks representative of facilities presently or planned to be opened to traffic in the DVRPC region will be prepared for use in the study. These networks will contain the roadways identified in Task 1 above. The DVRPC networks, centroids, cordon stations etc. will be updated in consultation with the consultant group. Additional highway networks required to test the highway improvement alternatives will be prepared under Task 7 below.

Task 5 - Prepare Travel Simulation Model

A travel simulation model for the Ben Franklin Bridge West-side Roadways Congestion Mitigation Study Area will be prepared. This includes the trip generation computer

program, inputs, and outputs, such as area type by zone, trip rate records, centroid and station coordinates, and trip adjustment multipliers. The outputs of trip generation will be stratified into three time periods, Peak (7:00AM to 9:00 AM and 3:00 PM to 6:00 PM), Midday (9:00 AM to 3:00 PM); and Evening (6:00 PM to 7:00 AM). Outputs of trip generation include trip productions, attractions, origins, or destinations by time of day for input to the gravity model for trip distribution for the study area.

Trip distribution model parameters, inputs, and outputs, for peak, midday and evening time periods including friction factors, and terminal and intra-zonal penalty matrices will be prepared.

Mode choice computer programs, inputs, and outputs for peak, midday, and evening time periods, including parking and auto operating costs, auto excess times, and price and income indices; and transit, auto person and auto driver matrices by trip purpose and time period will be provided as required

DVRPC will prepare highway assignment models for each time period including parameters, inputs, and link and facility level projected travel volumes for the extended study area. The base year transit and highway assignments will be validated with current traffic and transit counts. Selected summaries of outputs associated with DVRPC's model runs such as person-trip production and attraction totals by purpose and time period, vehicle-trip origin and destination totals by type, average trip lengths by purpose and mode, regional vehicle-miles traveled by functional class, and assigned unlinked transit trips by submode will be provided as required

Task 6 - Prepare No-build Travel Forecasts

DVRPC will prepare 2030 travel forecasts under the No-build Alternative. The No-build alternative will include all highway and transit facility improvements included in the DVRPC 2005 TIP and long range transportation plan, but exclude the highway improvements specifically proposed as part of congestion mitigation study. The primary products of the No-build forecasts are maps, figures, and tables displaying average daily (AADT) highway link volumes and AM and PM peak hour ramp and intersection forecasts for the facilities identified in Task 1. Truck volumes forecasts will be provided as required. Additional summaries of the travel simulation model outputs under the no-build alternative, such as trip tables and selected link analysis, will be provided as required.

Task 7 - Prepare Travel Forecasts for Improvement Alternatives

DVRPC will prepare 2030 travel forecasts for initial DRPA improvement alternatives 4 through 7. As in the No-build, each improvement alternative will includes all highway facility improvements included in the DVRPC 2005 TIP and long range transportation plan, but the improvement alternatives will also include alternative combinations of proposed bridge, highway ramp, and arterial roadway improvements.

The primary product of the improvement alternative forecasts are maps, figures, and tables displaying 2030 average daily (AADT) highway link volumes and AM and PM peak hour ramp forecasts for the proposed new facilities and the existing highway facilities identified in Task 1. Truck volumes forecasts will be provided as required. Additional summaries of the travel simulation model outputs under the improvement alternatives such as trip tables and selected link analysis will be provided as needed.

COST AND TIME ESTIMATES

Task	Cost	Time (Weeks from Authorization to Proceed)
1. Define Study Area and Zonal System	$ 6,000	3
2. Census, GIS, and Traffic Count Data	6,000	6
3. Demographic and Employment Forecasts	9,000	8
4. Base Highway Network	7,000	8
5. Prepare Travel Simulation Model	12,000	12
6: No-build Travel Forecasts	15,000	17
7. Forecast for Improvement Alternatives	20,000	22
Total	$75,000	22